

(21) Application No 8204791  
 (22) Date of filing 18 Feb 1982  
 (30) Priority data  
 (31) 3114663  
 (32) 10 Apr 1981  
 (33) Fed Rep of Germany (DE)  
 (43) Application published  
 20 Oct 1982

(51) INT CL<sup>3</sup>  
 A47L 15/42  
 (52) Domestic classification  
 A4F 29A5  
 B1D 1107 1506 1513  
 1819 1905 1906 1909 2301  
 2305 AK

(56) Documents cited  
 None

(58) Field of search  
 A4F

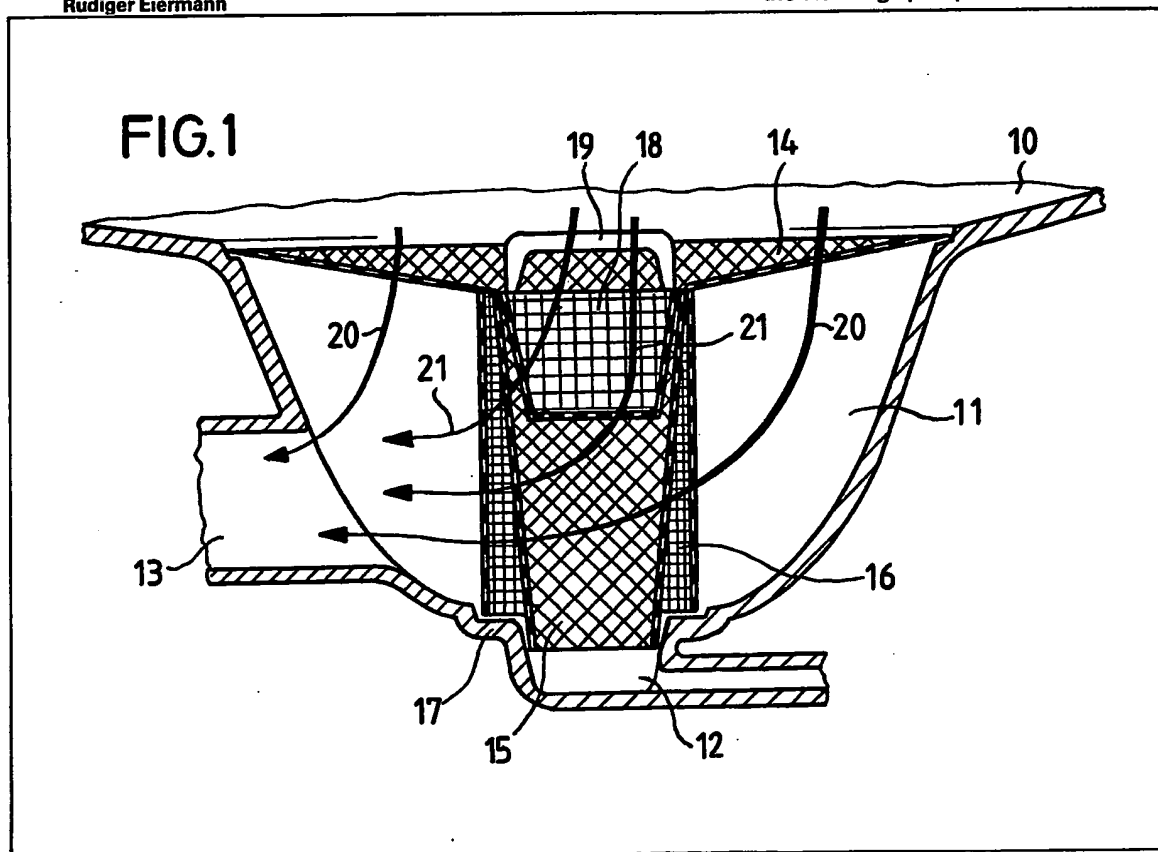
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(54) Dishwashing machine sump filter

(57) A dishwashing machine is provided with filter means (14, 15, 16, 18) in an outlet sump (11) thereof, the sump being dish-shaped and provided at its base with a suction outlet (12) to a discharge pump and in its side wall with a suction outlet (13) to a circulating pump. The sump (11) is covered at the top by a funnel-shaped fine sieve (14) which has a large generating angle and which has a transition in its central region leading into a sleeve-shaped fine sieve (15) extending as far as the suction outlet (12) for the discharge pump. The sleeve-shaped sieve (15) is surrounded at its periphery by a sieve tube (16) which is formed as a very fine sieve and which extends, at a distance from the sleeve-shaped fine sieve (15), from the funnel-shaped fine sieve (14) to the sump base portion (17) surrounding the suction outlet (12) for the discharge pump.



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FIG. 1

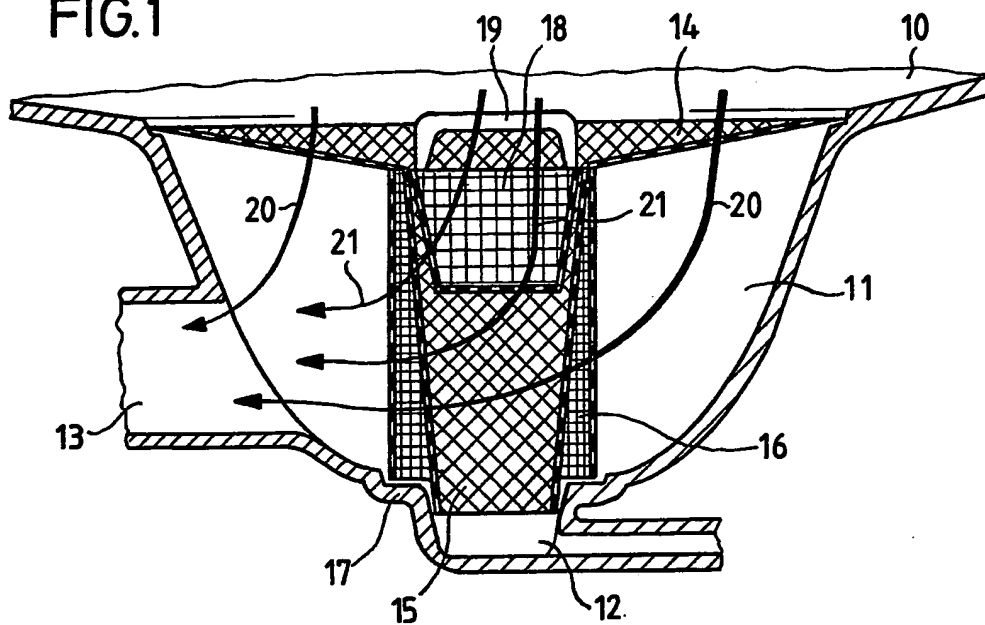
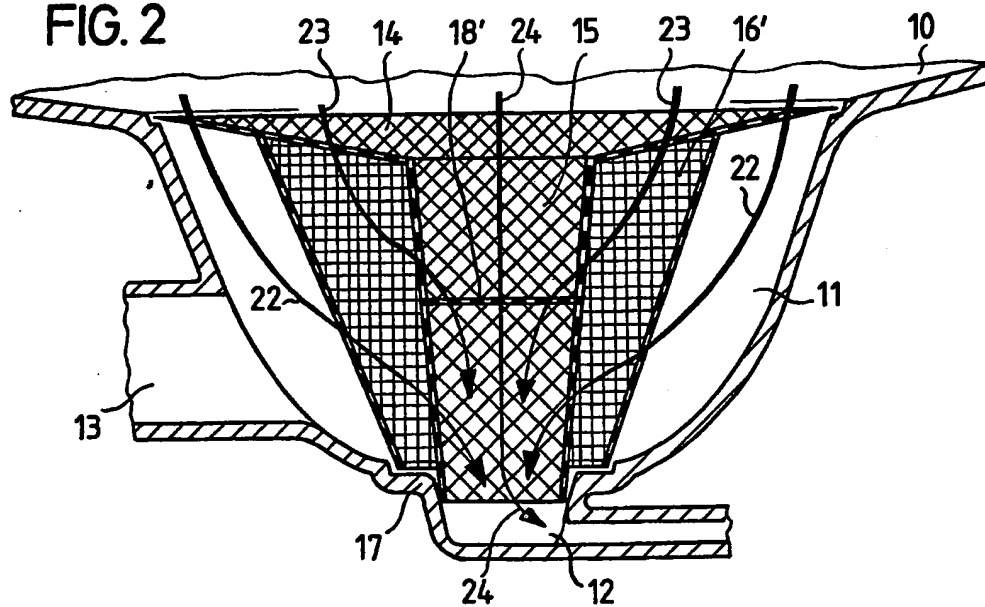


FIG. 2



## SPECIFICATION

## Dishwashing machine sump filter

5 The present invention relates to a dishwashing machine provided with filter means in an outlet sump of the machine.

An arrangement of filter sieves is disclosed in DE-OS 28 32 084, the arrangement comprising not only a first fine sieve, but also a second fine sieve in register therewith and adjustable relative to the first sieve for achieving different sieve aperture cross-sections. By this means, finely divided dirt is intended to be separated from the washing liquid.

15 The known arrangement, is, however, disadvantageous in that the intended adjustment of the two fine sieves relative to each other requires an additional adjusting element. Moreover, the sieve arrangement is largely ineffective if the two sieves are not extremely accurate in form and are not made and correctly disposed in the drain pan or sump of the machine in respect of the registration of the sieve apertures.

There is accordingly a need for a filter arrangement which is not susceptible to faults and which is suitable for the filtering of especially fine dirt particles from the washing liquid of dishwashing machines, preferably without substantially increasing the flow resistance to the circulating pump of the machine.

According to the present invention there is provided a dishwashing machine provided with an outlet sump having an outlet port in each of a side wall and a base thereof and with filter means arranged in the sump and comprising a first filter element having a wide-angle funnel-shaped upper sieve portion covering the top of the sump and a substantially sleeve-shaped lower sieve portion extending down from the central region of the upper sieve portion to the outlet port in the sump base, and a second filter element having a finer filter mesh than the first element and comprising a generally tubular sieve body which surrounds the peripheral wall of said lower sieve portion at a spacing therefrom and extends from said upper sieve portion down to a portion of the sump base surrounding the outlet port therein.

In a preferred embodiment, the sump or drain pan of the machine is dish-shaped and is provided at the base with a suction connection to a discharge pump and at the side with a suction connection to a circulating pump. The sump is covered at the top of a funnel-shaped fine sieve which has a large generating angle and which has a transition in its central region leading into a sleeve-shaped fine sieve extending as far as the suction connection of the discharge pump. The sleeve-shaped sieve is surrounded at its periphery by a further sieve tube which is formed as a very fine sieve and which extends, at a distance from the sleeve-shaped fine sieve, from the funnel-shaped fine sieve to the sump base surrounding the suction connection to the discharge pump.

This embodiment has the advantage that only a partial stream of the washing liquid sucked out by the circulating pump on the path through the

sleeve-shaped fine sieve to the suction connection of the pump flows through the very fine sieve, in which very fine dirt particles passing through the fine sleeve-shaped sieve are retained. Since the washing liquid is circulated for a fairly long time in the machine, the very fine sieve is able, during this period, to separate from the washing liquid virtually all the non-passing extremely fine dirt particles.

Two embodiments of the present invention will now be more particularly described by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a vertical section of a drain pan of a dishwashing machine provided with filter means in accordance with a first embodiment of the invention; and

Fig. 2 is a vertical section of a drain pan of a dishwashing machine provided with filter means in accordance with a second embodiment of the invention.

Referring now to the drawings, there is shown part of the washing vessel of a household dishwashing machine, the bottom 10 of the vessel having a transition at its centre into a dish-shaped sump or drain pan 11, to which is connected at the base a suction connection 12 of a discharge pump and at the side a suction connection 13 of a circulating pump. At the top, the drain pan 11 is covered by a funnel-shaped fine sieve 14 having a large generating angle or cone angle. This fine sieve 14 leads in its central region into a sleeve-shaped fine sieve component 15 which extends as far as the suction connection 12 of the discharge pump. At its periphery the fine sieve component 15 is surrounded by a further sieve tube 16, which is formed as a very fine sieve. This very fine sieve tube 16 runs at a distance from the sieve component 15 and extends from the fine sieve 14 covering the drain pan 11 to the pan base portion 17 surrounding the suction connection 12. In the first embodiment illustrated in Fig. 1, the sieve tube 16 has the form of a circular cylinder wall. In addition, in this embodiment, a removable, pot-shaped coarse sieve 18 having a handle 19 is inserted into the upper section of the sleeve-shaped fine sieve component

15. When the circulating pump operates, the washing liquid flows in correspondence with the arrows shown in Fig. 1 to the suction connection 13. The greater part of the washing liquid follows the path corresponding to the arrows 20 through the funnel-shaped sieve 14, which separates coarse and fine dirt particles from the liquid. These dirt particles travel into the fine sieve component 15 and partly settle in the suction connection 12. Coarse dirt residues which cause blocking of the discharge pump are retained in the coarse sieve 18.

A portion of the washing liquid, by contrast, follows the path corresponding to the arrows 21 through the coarse sieve 18, the fine sieve component 15 and the very fine sieve tube 16. Coarse dirt particles in this case are retained by the coarse sieve 18, fine particles by the fine sieve component 15 and very fine dirt particles by the very fine sieve tube 16.

In the second embodiment illustrated in Fig. 2, the very fine sieve tube 16' is funnel-shaped. It now

receives, in addition to the washing liquid penetrating through the sleeve-shaped fine sieve component 15, a considerable portion of the liquid which flows through the funnel-shaped fine sieve 14. With such a  
5 form of the sieve tube 16', its efficiency is highly increased, so that very fine dirt particles are filtered out in a comparatively short circulating period. Moreover, in this embodiment, instead of the removable coarse sieve 18, an intermediate tray acting as a coarse sieve is incorporated in the central  
10 region of the fine sieve component 15.

In Fig. 2, the flow path of the washing liquid when the discharge pump is operating is also illustrated by arrows. The liquid proportion following the path  
15 according to the arrows 22 detaches the very fine dirt particles which have precipitated on the inner face of the sieve tube 16'. The fine dirt particles precipitated on the inner face of the fine sieve component 15 are extracted by the liquid flow corresponding to the  
20 arrows 23 and 22. Finally, a portion of the washing liquid, together with the fine dirt particles removed from the upper face of the fine sieve 14, follows a path according to the arrow 24 through the coarse sieve tray 18 to the suction connection 12 of the discharge pump.

#### CLAIMS

1. A dishwashing machine provided with an outlet sump having an outlet port in each of a side wall and the base thereof and with filter means arranged  
30 in the sump and comprising a first filter element having a wide-angle funnel-shaped upper sieve portion covering the top of the sump and a substantially sleeve-shaped lower sieve portion extending down from the central region of the upper sieve portion to  
35 the outlet port in the sump base, and a second filter element having a finer filter mesh than the first element and comprising a generally tubular sieve body which surrounds the peripheral wall of said lower sieve portion at a spacing therefrom and extends  
40 from said upper sieve portion down to a portion of the sump base surrounding the outlet port therein.

2. A machine as claimed in claim 1, comprising a circulating pump having an inlet communicating with the port in the sump side wall and a discharge  
45 pump having an inlet communicating with the port in the sump base.

3. A machine as claimed in either claim 1 or claim 2, the filter means further comprising a third filter element which has a coarser mesh than the first filter  
50 element and comprises a generally pot-shaped sieve body removably inserted into the lower sieve portion of the first filter element.

4. A machine as claimed in either claim 1 or claim 2, the filter means further comprising a third filter  
55 element which has a coarser mesh than the first filter element and comprises a sieve tray arranged in the lower sieve portion of the first filter element.

5. A dishwashing machine substantially as hereinbefore described with reference to either Fig. 1  
60 or Fig. 2 of the accompanying drawings.